

The Effect of IT (Information Technology) on Financial Performance of the Banks Listed in Tehran Stock Exchange

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Abstract

The aim of the present study is to study the effect of information technology on the financial performance of the banks listed on Tehran Stock Exchange. For this purpose, 183 of the staff experts of information technology and finance departments of the banks listed on Tehran Stock Exchange have been selected as research sample by using simple random sampling method and responded to the questionnaire. In the end, the obtained data from these questionnaires were analyzed by using two-variable linear regression test and the results indicated that information technology dimensions including IT knowledge, IT operations and IT infrastructures have significant effect ($p < 0.01$) on financial performance of the banks listed on Tehran Stock Exchange. The results from Friedman's test also indicated that infrastructures of information technology (with average rating = 2.24) has the first rank, information technology knowledge (with average rating = 2.04) has the second rank and information technology operations (with average rating = 1.72) has the third rank.

Keywords: Infrastructure, knowledge, information technology operations, banks listed on Tehran Stock Exchange.

Introduction

Recent advances in the fields of information and technology as well as knowledge management have empowered so many industries in the line of acquiring, sharing and using information (Fu et al., 2010). However, it has been claimed that it is possible for the information technology to have vague and unclear effects on various dimensions of Supply Chain Management and have disappointing consequences of the executed investments in information technology which causes serious challenge for the vital role of information technology in firms' performance. With the support of information technology organizations can move Synchronous to the market needs toward ahead and manage their resources in a responsive way (Kim, 2007).

Growing trend of the information technology development requires accurate and scientific planning for its social uses. Considering the weak economic situation in so many developing countries, the necessity of giving attention to its economic uses is a special subject that has attracted the attention of experts and executives in development programs. On one hand, considering the role of the return on investment index in financial decision makings, the financial efficiency of information technology is an important subject that can have an effective role in the attitude and inclination of the economic agencies for its development (Khodada Hossieni, 2006).

Today's, investment level in information technology industry has increased considerably that these investments in 2003 have been three times of any other type of investments (Adkinson et al., 2004). Since the guiding light of the private sector in choosing the options is generally risk and return of an investment, certainly there is the expectation of very high levels of returns from information technology equipments that such level of investment has been developed in this phenomenon.

In general, summarization information technology can be considered as the electronic convergence point of data process and Telecommunication. This convergence point have two dimensions: first removal of the distances and hence placement of the previously separated computers in one World Wide Web, and second computerization of the telecommunication systems that create new capacities in transmitting audio and video. This two dimensional convergence provides human with new tools and instruments for gathering, storing, processing, organizing, transmitting and displaying information (Mellat-Parast & Lester, 2007).

The achieved advances in the field of information technology directly can be considered as a result of the recent advances of microelectronic. It is because the achieved scientific and corresponding results with technology in the domain of transistors, Semiconductors, integrated circuits and chips have been such that play the role of an adhesive that connect different departments of an organization together. This factor is like an arrow in the quiver of the management and at the same time is the instrument for controlling and innovation. Information technology today uses electronic circuits for processing information. Information technology is a replacement or supplement for physical capabilities of humans and this is considerable in comparison to the mechanical technology that has been replaced the physical capabilities of human. Some believe that information technology only can be applied on activities that are categorized under “data processing” and “information archiving”, while some others believe that any other kind of application and use of electronic equipment such as robots in production automation is to be considered as information technology. Another logical view is that the information technology concept contains those applications and instances that to some extent include electronic data processing (Borgman et al., 2007).

Growing trend of the information technology development requires accurate and scientific planning for its social uses. Considering the weak economic situation in so many developing countries, the necessity of giving attention to its economic uses is a special subject that has attracted the attention of experts and executives in development programs. On one hand, considering the role of the return on investment index in financial decision makings, the financial efficiency of information technology is an important subject that can have an effective role in the attitude and inclination of the economic agencies for its development. Investment in information technology both for managers and economic investors and for researchers has a significant importance. Considering the existing Paradox in productivity, evaluation of factors that prevents some agencies from doing business regarding this type of investment has attracted the attention of researchers, executives and investments of this technology (Lim et al., 2004). In studying the relationship between information technology and productivity, especially financial performance of agencies, some has confirmed this relationship and some also have doubted it or even rejected it (Wang et al., 2008) that among the reasons we can mention mismanagement, distribution of profit, time gaps, measurement errors, topic characteristics, research structure and sample characteristics including economic development (Fathi et al., 2007).

Therefore, considering the effect of information technology on financial performance of the banks listed on Tehran Stock Exchange and the originality of the topic and the personal interest, the research seeks to study the effect of information technology on financial performance of the banks listed in Tehran Stock Exchange as the main research problem. Therefore, considering the above mentioned as well as the vital importance of the Stock Exchange of Tehran city, studying the effect of information technology on financial performance of the banks listed in Tehran Stock Exchange appears to be necessary and somehow we can claim that there are some concerns regarding it and also due to lack of existence of such a study in the environment of such organizations, the researcher

has tried to study the effect of information technology on financial performance of the banks listed on Tehran Stock Exchange. In the following the literature of the research will be presented.

Theoretical background and research conceptual model

Information technology

Information is like the blood which is circulating in the body of an organization and gives life to it. Information can feed the decision making process regarding the structure, technology and innovation and also information is like the life vessel that connects an organization to the suppliers of raw materials and customers. Information technology development such as computers and telecommunication devices has transformed the nature of so many office tasks and works. The networks of work from home and becoming automated have made possible the minimization of some departments and reducing the number of employees in an organization. From these phenomena (information technology) it can be deduced that large organizations become smaller and inclination toward more flexible and smaller organization become stronger (Damianides, 2004).

Of course, at first, accepting this is not easy for the managers of organizations and treating information equal as resources such as human resources, raw material, financial resources is not possible and easy. Even for so many of the managers at the executive level also, considering an intangible element as the main source of the vital facilities is so much difficult. However, if we will look at this correctly, we can see that how these intangible elements increases productivity and profitability in every organization and affect the optimization of decision making of strategic manager. Information can play an important role in the life and survival of every organization. In fact, information is the instrument and tool that makes possible the better and more appropriate use of the tangible resources of an organization for the management. Information often is not managers in an effective way in an organization and in spite of the fact that in so many organizations, information has been integrated into advanced technology and automated complex systems for M. I. S. services (Management Information System) and office automation (OA) System are used on an extensive level, still no comprehensive study has been conducted regarding the issue of management of these systems and information service centers and the way and level of application of these technologies and management of information resources.

The first step for using information technology can be considered as the managers' awareness from its potential value. Like the management principles that a more active role of managers facilitated the application of its principles, with valuing the role of information in an organization we will become more aware of the application of information technologies and the role it has and can have in management decisions and strategies and how to utilize it (DeHaes & Grembergen, 2009).

Information technology is an integral and fundamental part for supporting, maintaining and growing a business. With this knowledge, companies are making huge investments in the field of information technology. Gartner (2010) reports that in spite of the Rapidly declining economy, currently the expenses made on information technology at the global level in 2010 reaches 3.4 Trillion that comparing to 2009 which has an increase of 4.6%, while a large part of the made investment on information technology don't have a guarantee of high return. Standish Group (2006) reports that around 67% of all the information technology projects have been unsuccessful or face problem and challenge in justifying the made investments. Companies make large and huge investments on information technology and have high reliance on it and put themselves at high levels of risks. Hence, organizations should constantly review and protect their information technology assets against disasters and risks.

During recent decade information technology management has attracted the attention of the researchers and practitioners in this field and this topic has been categorized under the topic of firm management (Korac-Kakabadse & Kakabadse, 2001; Lainhart, 2000). In spite of the increasing importance of information technology management in companies, the focus of the most of the studies of information technology management has been mainly on the following:

- Management of information technology;
- Relationship between information technology management and its determining factors;
- Relationship between information technology management and its effects

The research method used in the present study uses the systematic research of the literature for conceptualizing an effective framework of information technology management adopted from Bryman's approach (2008).

Financial performance

Key financial performance indices includes four ratio of financial ratios including Return on Working Capital or Return on Asset (ROA), Return on Equity (ROE), Return on Sales (ROS) and Operating Expenses/Operating Incomes (OE/OI).

Return on Equity (ROE): The profit secured for the owners of a business unit is named as Return on Equity. This ratio is calculated in the following way:

Return on Equity (ROE) = net profit / Average equity.

Return on Assets (ROA): Productive assets have fundamental role in obtaining profit, the more the assets are used with higher efficiency the business unit will have higher profitability. Regardless that the assets have been procured from borrowed funds or investment of the owners, perform the relevant duties in a similar way. Therefore, the return on assets should be calculated before deducting interests. In case the interest expense will not be deducted the Income tax expense also should not be deducted. It is because tax is calculated based on the earnings after interest. Therefore, for measuring the return on asset "Earnings before Interest & Tax "(EBIT) are usually used.

Return on Asset (ROA) = earnings before interest and tax / Average total assets

This ratio should that every one Rial produces n Rial earnings that from it interest and tax should be paid (Shabahang, 2005).

Return on Sales (ROS): Profit from the average sales income is called as the return on sales or sales margins that is calculated as a percentage of net sales income as per the following (Shabahang, 2005).

Return on Sales (ROS) = net profit / net sales income.

Operating Expenses/Operating Incomes (OE/OI): Expense refers to the outgaining flow of the assets or other uses of income or creating debt during a period which is undertaken for producing and devlivering goods, delivering services or performing other activities in line with executing the main and continuous operation of the business unit; in other word, expense refers to a reduction in assets or increase in gross debts that are identified and measure as per the Accepted Accounting Principles are resulted from that group of the activities of the business unit that can change the equity. Operating expenses in total refer to those expenses that are resulted from the company operations and operating incomes are also those incomes that are obtained through company's operations, either capital operation or non-capital.

(OE/OI) ratio = operating expenses / operating incomes

This ratio which is obtained from dividing operating expenses to operating incomes is an index for evaluating that how much of the expenses of the company is covered by its operating

incomes; also, this ratio is used as a key index especially in banking industry or for determining how a certain organization can cover its expenses and therefore has an efficient method for its costing (Akbari, 2004).

Interpretation and application of financial ratios

In addition to the presented financial ratios above, other ratios can be calculated as well or these ratios can be also calculated in different ways.

In some cases, a little number of financial ratios will be enough for decision making regarding a business unit, however, what is more important than calculating them is interpreting them. Financial analysts with evaluating and assessing financial ratios can decide about the necessity of further and more assessment in certain aspects and dimensions of a business unit. General analysis of a business unit provides more information comparing to the analysis of each of these financial ratios separately. Gaining a deep understanding of the meaning and the relationship between financial ratios and the items mentioned in financial statements is also necessary. Gaining this understanding requires sufficient experience in analyzing and interpreting financial statements. In addition, even experienced analysts also cannot apply their skills equally about all the financial statements. Each industry has its own specific characteristics that financial analyst should be familiar with them and it is not possible for one analyst to understand all industries equally. Financial statements interpreters for accessing their required information refer to different sources. Information about new rules and regulations, technologies development, foreign relations and economic situation of the country might be related to the studies and analyses of a certain firm. In case of necessity, interpreters can directly refer to the companies who have studied this information and can ask their questions. Financial statements interpreters also have a role in creating accounting changes and transformation. For example, in some countries the changes in financial statements, before being requested by financial interpreters insistently, was not a mandatory part of financial statements (Pérez-López & Alegre, 2012).

Considering the aforementioned and also the aim of the present research which is to study the effect of information technology on financial performance of the banks listed on Tehran Stock Exchange, the variables studied in the study in the form of the research conceptual model have been presented in figure 1:

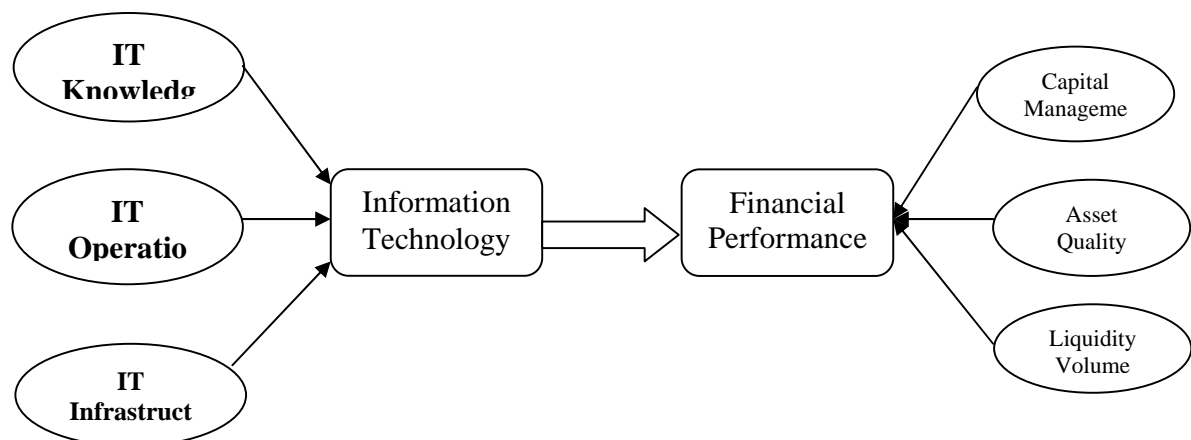


Figure 1. Research conceptual model (Pérez-López & Alegre, 2012)

Methodology

The present research is an applied research from aim point of view, and from methodology point of view, it is a descriptive – correlation research and is a survey research from the point of view of implementation.

Research population and sample

The population of the present research include all the staff experts of information technology (IT) and finance departments of the banks listed on Tehran Stock Exchange that are a total number of 348 persons. For determining the required sample size, the simple random sampling method was used that the number of required sample for this study considering this method is equal to 183 individuals that has been studied.

Data collection instrument

In the present research for studying the effect of information technology on financial performance of the banks listed on Tehran Stock Exchange the standard questionnaire adopted from Pérez-López & Alegre (2012) was used. The content validity of this questionnaire was approved and confirmed by three experts in this field and its reliability was also tested by using Cronbach's alpha test, which is equal to 0.75 for information technology variable, and it is equal to 0.79 for financial performance.

Research findings

The findings of the research indicate that 25.14% of people under study are female and 74.86% are male that from them 1.64% have associate degree and lower, 62.84% have bachelor degree, 33.33% have master degree and 2.19% have PhD and higher. From the point of view of work experience, 7.10% of the individuals have a work experience of 1 to 5 years, 26.23% have 6 to 10 years of work experience, 46.45% have 11 to 15 years of work experience, 12.02% have 16 to 20 years of work experience and 8.20% have more than 20 years of work experience.

For testing the research hypotheses, two-variable linear regression test was used. Table 1 indicates the results

Table 1. Results of the effect of variables on financial performance of banks

Variable	R ² adj.	Beta	F	P
IT Knowledge	0.27	0.52	66.924	0.00
IT Operations	0.46	0.68	158.908	0.00
IT Infrastructures	0.22	0.47	52.237	0.00

Table 2. The results of ranking the effective factors on financial performance

Variable	Average rate	Rank
IT knowledge	2.04	2
IT operations	1.72	3
IT infrastructures	2.24	1
Chi-Square	27.399	
df	2	
Sig.	.000	

The results of two-variable linear regression test show that the dimensions of information technology including IT knowledge, IT operations and IT infrastructures have significant effect ($p < 0.01$) on the financial performance of the banks listed on Tehran Stock Exchange. In order to

study and rank the effective factors on financial performance of the banks, the Friedman's test was used according to table 2.

The results of the Friedman's test show that, among the effective factors on financial performance of the banks listed on Tehran Stock Exchange in terms of rank, there is a significant difference ($p < 0.01$). It means that IT infrastructures (with average rating = 2.24) have the first rank, IT knowledge (with average rating = 2.04) has the second rank and IT operations (with average rating = 1.72) have the third rank.

Conclusion

Today, information technology (IT) has turned into a significant factor in future development of financial services industry and especially the banking industry. The transformations occurred in IT and telecommunication significantly has contributed to the growth and profitability of financial institutions around the world. Also, on the other hand, the banking industry is among the fabrics that due to some reasons, these intangible resources can sought more in it and achieve their strategic importance. In the current century using IT in banking is comprehensive and necessary. Today, considering the fact that data are stored electronically in data bases, at the time of facing with any problem which results in the failure of IT systems a limited number of banks can quickly present accurate information regarding their customers' bank accounts (Spremic et al., 2008).

One of the most important information sources for measuring financial performance of commercial firms is their financial statements. Balance Sheet and Profit and Loss Statement are two of the main financial statement that is used in analyzing the financial performance of commercial firms. The figure representing the financial performance of the business unit in these statements are so much in details and lengthy. Hence, for making use of this information it is necessary to analyze then in the form of understandable information which are related to each other and limited as much as possible. Financial ratios are among the most important tools that based on them the existing information in financial statements is summarized and analyzable. In measuring the financial performance of an organization on the basis of these financial ratios, the targeted values of these ratios are determined and then they are compared with actual values.

As per the definition, financial performance is an extent to which a firm has managed to achieve the targeted financial ratios that the results of the present study indicate that the dimensions of information technology including IT knowledge, IT operations and IT infrastructures have a significant effect ($p < 0.01$) on financial performance of the banks listed in Tehran Stock Exchange that for improving these processes, in the following section a few practical recommendations are provided:

- ✓ It is recommended to establish an official department of Management Information Systems.
- ✓ Using Computer systems for analyzing customer and market information is recommended.
- ✓ It is recommended that the technical support staff of the bank try to constantly improve their knowledge and awareness in the field of computer systems.
- ✓ Improving the technical expertise of bank personnel in the field of computer is recommended.
- ✓ The bank personnel are recommended to be updated about new computer innovations.
- ✓ The constant use of Decision Support Systems is recommended.
- ✓ Innovative methods should be established for collection customer data and information from online sources.
- ✓ For improving and making the infrastructures strong the use of professional software programs are recommended.

- ✓ It is recommended that that bank members would be connected through a computer network to each other all the time.

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